

WHAT IS CLAIMED IS:

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1. An embedded coding apparatus for embedding first data in second data, and outputting coded data, said apparatus comprising:

selecting means for selecting a predicting method for predicting data of interest in said first data, based on said second data;

predicting means for obtaining a prediction value corresponding to said data of interest based on the prediction method selected by said selecting means; and

prediction margin of error computing means for computing prediction margin of error based on said data of interest and said prediction value, and outputting as said coded data.

2. An embedded coding apparatus according to Claim 1, wherein said predicting means takes data nearby said data of interest within said first data as a prediction value corresponding to said data of interest.

3. An embedded coding apparatus according to Claim 1, further comprising judging means for judging whether or not said second data can be embedded as to said data of interest;

wherein, in the event that said judging means has judged that said second data can be embedded as to said data of interest, said selecting means makes selection of said prediction method based on said second data.

4. An embedded coding apparatus according to Claim 3, wherein, in the event that said judging means has judged that said second data cannot be embedded as to said data of interest, said selecting means makes selection of said prediction method based on said data of interest and said first data used for prediction of said data of interest;

and wherein said predicting means obtains a prediction value corresponding to said data of interest, based on the prediction method selected by said selecting means.

5. An embedded coding apparatus according to Claim 3, wherein said judging means judges whether or not said second data can be embedded as to said data of interest, based on said data of interest and said first data used for prediction of said data of interest.

6. An embedded coding apparatus according to Claim 5, wherein said judging means judges the magnitude relation between said data of interest and two sets of said first

and wherein, in the event that said data of interest is a value within the range of said two sets of first data, judgment is made that said second data can be embedded as to said data of interest;

7. An embedded coding apparatus according to Claim 6, wherein, in the event that said judging means judges that said second data can be embedded as to said data of interest, said selecting means selects one of two predicting methods used for predicting said data of interest respectively having said two sets of first data as said prediction values thereof, based on said second data.

8. An embedded coding apparatus according to Claim 6, wherein, in the event that said judging means judges that said second data cannot be embedded as to said data of interest, said selecting means selects, of the two predicting methods used for predicting said data of interest respectively having said two sets of first data, that with the greater prediction margin of error, as said

prediction values thereof.

9. An embedded coding apparatus according to Claim 6, wherein, in the event that said two sets of said first data used for prediction of said data of interest are the same value, two sets of first data are extracted, made up of one of said two sets of first data and another set of first data nearby said data of interest;

and wherein said judging means judges the magnitude relation between said data of interest and two sets of said first data used for prediction of said data of interest;

and wherein, in the event that said data of interest is a value within the range of said two sets of first data, judgment is made that said second data can be embedded as to said data of interest;

and wherein, in the event that said data of interest is a value not within the range of said two sets of first data, judgment is made that said second data cannot be embedded as to said data of interest.

10. An embedded coding apparatus according to Claim 9, wherein, in the event that said judging means judges that said second data can be embedded as to said data of interest, said selecting means selects one of two predicting methods used for predicting said data of

interest respectively having said two sets of first data as said prediction values thereof, based on said second data.

11. An embedded coding apparatus according to Claim 9, wherein, in the event that said judging means judges that said second data cannot be embedded as to said data of interest, said selecting means selects, of two predicting methods used for predicting said data of interest respectively having said two sets of first data, that with the greater prediction margin of error, as said prediction values thereof.

12. An embedded coding apparatus according to Claim 1, wherein said first data is image data.

13. An embedded coding apparatus according to Claim 12, wherein said first data and said second data is one part and the other part of said image data separated into two.

14. An embedded coding apparatus according to Claim 13, further comprising separating means for separating said image data into two parts, for embedding said second data as said other part as to said first data as said one part.

15. An embedded coding apparatus according to Claim 14, further comprising compressing means for compressing said second data separated by said separating means, wherein said separating means counts the amount of data capable of being embedded in said first data, compares said counted data amount and said compressed second data amount, and optimally separates said image data into two, based on said comparison results.

16. A method for embedding first data in second data, and outputting coded data, comprising the steps of:  
selecting a predicting method for predicting data of interest in said first data, based on said second data;  
obtaining a prediction value corresponding to said data of interest based on the selected prediction method;  
computing prediction margin of error based on said data of interest and said prediction value; and  
outputting said prediction margin of error as said coded data.

17. A storage medium for storing a program, which is controllable by a computer, for embedding first data in second data, and outputting coded data, said program comprising the steps of:

selecting a predicting method for predicting data of

interest in said first data, based on said second data;  
obtaining a prediction value corresponding to said  
data of interest based on the selected prediction method;  
computing prediction margin of error based on said  
data of interest and said prediction value; and  
outputting said prediction margin of error as said  
coded data.

18. A decoding apparatus for decoding coded data  
encoded by embedding second data in first data, into said  
first data and said second data, said apparatus comprising:  
recognizing means for recognizing a prediction method  
for predicting a prediction value corresponding to said  
first data, from data of interest in said coded data; and  
decoding means for decoding said data of interest  
into the original said first data, and also decoding said  
second data, based on said prediction method recognized by  
said recognizing means.

19. A decoding apparatus according to Claim 18,  
further comprising judging means for judging whether or not  
said second data is embedded as to said data of interest;  
wherein, in the event that said judging means has  
judged that said second data is embedded as to said data of  
interest, said second data is decoded based on said

prediction method.

20. A decoding apparatus according to Claim 19, wherein said judging means judges whether or not said second data is embedded as to said data of interest, based on said data of interest and said first data already decoded.

21. A decoding apparatus according to Claim 20, wherein, in the event that said judging means judges that said second data is not embedded as to said data of interest, said recognizing means recognizes said prediction method based on said data of interest and said first data already decoded, and said decoding means decodes said data of interest into the original said first data, based on the prediction method recognized by said recognizing means.

22. A decoding apparatus according to Claim 20, wherein said judging means judges the magnitude relation between said data of interest and two sets of said first data already decoded;

and wherein, in the event that said data of interest is smaller than the difference between said two sets of first data already decoded, judgment is made that said second data is embedded as to said data of interest;



and wherein, in the event that said data of interest is not smaller than the difference between said two sets of first data already decoded, judgment is made that said second data is not embedded as to said data of interest.

23. A decoding apparatus according to Claim 22, wherein, of the predicting methods respectively having said two sets of already-decoded first data as said prediction values thereof with regard to said data of interest in which said second data is embedded, said recognizing means recognizes the prediction method wherein the decoding results of said data of interest are within the range of said two sets of first data as being the prediction method for predicting said first data corresponding to said data of interest.

24. A decoding apparatus according to Claim 22, wherein, of the predicting methods respectively having said two sets of already-decoded first data as said prediction values thereof with regard to said data of interest in which said second data is not embedded, said recognizing means recognizes the prediction method with the greater prediction margin of error as being the prediction method for predicting said first data corresponding to said data of interest.

25. A decoding apparatus according to Claim 22, wherein, in the event that said two sets of said first data already decoded are the same value, two sets of first data comprising one of said two sets of first data and the other first data already decoded are extracted;

and wherein said judging means judges the magnitude relation between said data of interest and two sets of said first data;

and wherein, in the event that said data of interest is smaller than the difference between said two sets of first data, judgment is made that said second data is embedded as to said data of interest;

and wherein, in the event that said data of interest is not smaller than the difference between said two sets of first data, judgment is made that said second data is not embedded as to said data of interest.

26. A decoding apparatus according to Claim 25, wherein, of the predicting methods respectively having said two sets of first data as said prediction values thereof with regard to said data of interest in which said second data is embedded, said recognizing means recognizes the prediction method wherein the decoding results of said data of interest are within the range of said two sets of first

data as being the prediction method for predicting said first data corresponding to said data of interest.

27. A decoding apparatus according to Claim 25, wherein, of the predicting methods respectively having said two sets of first data as said prediction values thereof with regard to said data of interest in which said second data is not embedded, said recognizing means recognizes the prediction method wherein the prediction margin of error is greater as being the prediction method for predicting said first data corresponding to said data of interest.

28. A decoding apparatus according to Claim 18, wherein said first data is image data.

29. A decoding apparatus according to Claim 28, wherein said first data and said second data is one part and the other part of said image data separated into two.

30. A decoding apparatus according to Claim 29, further comprising joining means for joining said decoded first data as said one part and said decoded second data as said other part, to configure the original said image.

31. A decoding apparatus according to Claim 30,

wherein, in the event that said second data is compressed and embedded in said first data, said decoding means decodes said compressed second data;

and further wherein decoding apparatus comprises expanding means for expanding said compressed second data back into second data, said joining means joining said decoded first data and said second expanded data to configure the original said image.

32. A decoding method for decoding coded data encoded by embedding second data in first data, into said first data and said second data, comprising the steps of:

recognizing a prediction method for predicting a prediction value corresponding to said first data, from data of interest in said coded data; and

decoding said data of interest into the original said first data, and also decoding said second data, based on said recognized prediction method.

33. A storage medium for storing a program, which is controllable by a computer, for decoding coded data encoded by embedding second data in first data, said program comprising the steps of:

recognizing a prediction method for predicting a prediction value corresponding to said first data, from

data of interest in said coded data; and

decoding said data of interest into the original said first data, and also decoding said second data, based on said recognized prediction method.

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